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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/116,589	07/16/1998	SHINGO NISHIKAWA	Q51098	2728

7590 05/14/2002

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 05/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/116,589

Applicant(s)

NISHIKAWA ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28 and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **March 7, 2002** has been entered.
2. This Office Action is also in response to applicant's amendment filed on March 7, 2002, which has been entered as paper number 27.
3. By this amendment, the applicant has amended claim 29.
4. Claims 28 and 29 remain pending in this application.
5. The rejection to claim 29 under 35 USC 112, second paragraph, set forth in the previous Office Action is **withdrawn** in response to applicant's amendment.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 28 and 29 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

Claims 28 and 29 recites the recording medium comprises "a collection of pixels" and one of the plurality of holograms are assigned to "at least part of the pixels" however the specification and the

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claims fail to teach how could the plurality of holograms and the "collection pixels" be made by simply having a photosensitive material and a reflection type or transmission type of hologram.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The phrase "one o plurality" recited in claim 29 is indefinite and in error. Clarification is required.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Hopwood (PN. 4,915,464) in view of the patent issued to Minami (PN. 5,372,900).**

Hopwood teaches methods for producing holographic optical element wherein the methods comprise the step of adhering *a photosensitive hologram material* (45 in Figure 5 or 61 in Figure 7), on a *master reflection type hologram* (40 in Figure 5 or 62 in Figure 7) and the step of illuminating a reconstruction light to the master hologram through the hologram material so that the reflected and diffracted light from the reflection type hologram interferes with the incident light to form interference fringes and the step of recording such in the hologram material, (please Figures 5 and 7, columns 9-11).

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Hopwood further teaches that the reflection master hologram comprises a plurality of hologram strips (41-44 in Figure 5 or 63-66 in Figure 7) such that theses plurality of hologram strips may be recorded in the holographic material wherein each of the strip holograms serves as the **pixel**.

This reference has met all the limitations with the exception that it does not teach explicitly that the holograms recorded are volume holograms and it does not disclose explicitly that the reflection type master hologram used for recording is a relief hologram. However since both volume hologram and thin hologram are well known types of holograms that only are distinguished by the fringes size comparing to the thickness of the recording film and since fringes size of the master holograms shown in Figures 5 and 7 (of Hopwood) extends through the hologram medium the holograms are therefore implicitly to be volume type. Also since the specification fails to teach the criticality of having a volume hologram would overcome any problem presented in the prior art it would therefore have been an obvious variation and an obvious matter of design choice to one having ordinary skilled in the art to produce the holographic optical element with the plurality of holograms being volume holograms. A relief type of hologram is also one of the most well known types of fringes may be recorded in hologram therefore to use a relief type hologram or other type of hologram as the master hologram for recording is rather an obvious variation to one skilled in the art and is an obvious matter of design choice that requires only routine skill in the art since the specification also fails to disclose the criticality of using a relief type hologram would overcome any problem stated in the prior art.

The Hopwood reference also does not teach explicitly that the reflection type master hologram comprises a computer-generated hologram. However using a computer to generate hologram is extremely well known in the art and to use a computer-generated hologram as a master hologram for recording a second hologram is also very well known in the art. Such is demonstrated by the teachings of **Minami** wherein a reflection type computer-generated hologram (11, Figure 3) is used as a master hologram for recording a reflection type hologram on the photoresist plate (41, Figure 3). It would then have been an

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obvious modification to one having ordinary skill in the art to apply the teachings of Minami to modify the master reflection type hologram of Kawazoe et al to make it a computer-generated hologram for the benefit of providing an alternative way of making the master hologram.

12. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Molteni et al (PN. 5,473,447) in view of the patent issued to Moss et al (PN. 5,016,953).

Molteni et al teaches a hologram stereogram recording method wherein the method comprises the step of providing a *hologram recording plate* (37) on one side of a *transmission hologram* (H_1) that serves as the *master hologram*, which has a *plurality of strip holograms* that each represents a different view of a scene and a corresponding slit (17), and the step of illuminating the transmission hologram by coherence beams (36) to reconstruct the plurality of these strip holograms in series wherein each of the reconstructed strip holograms interferes with the coherence reference beams (38), illuminated from the other side of the recording plate (37), to produce interference fringes and to record such in the recording plate (37). The produced hologram (H_2) from the recording plate (37) is a holographic stereogram, which comprises the plurality of perspective views, originally recorded in the master hologram (H_1), (please see Figure 6 and columns 13-14). The plurality of strip holograms serves as the collection of the pixels. The feature of stacking the recording plate on the transmission master hologram or adjacent to the master hologram is considered to be obvious matter of design choices since it does not affect the result of the recording.

This reference has met all the limitations of the claim. Molteni et al also teaches that any suitable hologram recording material may form the recording plate but it does not disclose explicitly that it is photosensitive material. However such feature is either inherently met since Molteni et al teaches that the hologram is recorded by the *interference between illuminated coherent light* where photosensitive property is an **essential** property required in the recording plate to make the recording possible or an

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obvious modification to one skilled in the art since photosensitive materials are very well known hologram recording material and it has been held to select a known material on the basis of its suitability for the intended use is a matter of design choice. In re Leshin, 125 USPQ 416.

Claim 29 has been amended to include the feature having the reconstruction light strikes a first surface of the transmission master hologram, which is opposite to a second surface facing the recording medium. Such feature is shown in Figures 6 and 10 in the cited Molteni et al reference.

Molteni et al does not disclose explicitly that the produced hologram is a volume hologram however since both volume hologram and thin hologram are known types of holograms distinguished only by the fringes size comparing to the thickness of the recording plate and since the specification fails to disclose the criticality of having a volume hologram would overcome any problem presented in the prior art it would therefore have been an obvious variation and an obvious matter of design choice to one having ordinary skilled in the art to produce the hologram as a volume hologram.

Molteni et al reference also does not teach explicitly that the transmission master hologram comprises a computer-generated hologram. However using a computer to generate hologram is extremely well known in the art and to use a computer generated hologram as a master hologram for recording a second hologram is also very well known in the art. Such are demonstrated by the teachings of Moss et al wherein a transmission type computer generated hologram (29, Figure 2) is used as a master hologram for recording a reflection type hologram on the holographic plate (33, Figure 2). It would then have been an obvious modification to one having ordinary skill in the art to apply the teachings of Moss et al to modify the master transmission type hologram of Molteni et al to make it a computer generated hologram for the benefit of providing an alternative way of making the master hologram.

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Response to Arguments

13. Applicant's arguments filed on March 7, 2002 have been fully considered but they are not persuasive. The newly amended claim has been fully considered and rejected for the reasons stated above.

14. Applicant's arguments have been fully addressed in the paragraphs above.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A. Chang, Ph.D.
May 13, 2002

Audrey Y. Chang
Primary Examiner
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